

WE CLAIM:

1. An ink stick for use in a solid ink feed system of a phase change ink printer, wherein the solid ink feed system includes an elongate ink stick feed channel with an elongate shaped guide rail extending in a feed direction, and a key plate covering at least a portion of the ink stick feed channel along the feed direction, wherein the key plate has an insertion opening providing access in an insertion direction into the feed channel, the ink stick comprising:

a three dimensional ink stick body having a guide surface and an insertion perimeter; and

a non-planar shaped guide element formed in the guide surface shaped to interact with the elongate shaped guide rail of the solid ink feed system for guiding the ink stick along the guide rail;

wherein the ink stick insertion perimeter is in a plane substantially perpendicular to the insertion direction;

wherein the insertion direction is substantially different from the feed direction; and

wherein the insertion perimeter has at least one perimeter section forming a nonlinear key element that matches in size and shape a nonlinear key element in the perimeter of the key plate insertion opening.

2. The ink stick of claim 1, wherein the insertion perimeter forms a visually recognizable symbol, and the at least one perimeter section forms a portion of the visually recognizable symbol.

3. The ink stick of claim 1, wherein the insertion perimeter forms an alphanumeric character, and the at least one perimeter section form a portion of the alphanumeric character.

4. The ink stick of claim 1, wherein the insertion direction is substantially perpendicular to the insertion direction.

5. An ink stick for use in a solid ink feed system of a phase change ink printer, wherein the solid ink feed system includes an elongate ink stick feed channel with an elongate shaped guide rail extending in a feed direction, and a key plate covering at least a portion of the ink stick feed channel along the feed direction, wherein the key plate has an insertion opening providing access in an insertion direction into the feed channel, the ink stick comprising:

a three dimensional ink stick body having a guide surface and an insertion perimeter; and

a non-planar shaped guide element formed in the guide surface shaped to interact with the elongate shaped guide rail of the solid ink feed system for guiding the ink stick along the guide rail;

wherein the ink stick insertion perimeter is in a plane substantially perpendicular to the insertion direction;

wherein the insertion direction is substantially different from the feed direction; and

wherein at least a portion of the insertion perimeter is shaped to form a visually recognizable symbol.

6. The ink stick of claim 5, wherein the visually recognizable symbol is an alphanumeric symbol.

7. The ink stick of claim 5, wherein the non-planar shaped guide element is an elongate non-planar shaped guide element that extends in the feed direction along the entire length of the guide surface.

8. A set of ink sticks for use in a solid ink feed system of a phase change ink jet printer, wherein the phase change ink jet printer has a plurality of ink stick feed channels, each having an elongate shaped guide rail extending in a feed direction, and a plurality of ink stick openings, each for inserting ink sticks in an insertion direction into a corresponding one of the feed channels, the set of ink sticks comprising:

a first ink stick comprising a first three dimensional ink stick body;

wherein the first ink stick body has a first non-planar shaped guide element oriented in a first feed direction;

wherein the first non-planar shape guide element is shaped to interact with the elongate shaped guide rail of a corresponding first ink stick feed channel for guiding the ink stick in the first feed direction along the first guide rail;

wherein the first ink stick body has a first insertion perimeter forming the shape of a first visually identifiable symbol; and

wherein the first insertion perimeter is oriented in a different direction than the first feed direction; and

a second ink stick comprising a second three dimensional ink stick body;

wherein the second ink stick body has a second non-planar shaped guide element oriented in a second feed direction;

wherein the second non-planar shaped guide element is shaped to interact with the elongate guide rail of a corresponding second ink stick feed channel for guiding the ink stick in the second feed direction along the second guide rail;

wherein the second ink stick body has a second insertion perimeter forming the shape of a second visually identifiable symbol;

wherein the second insertion perimeter is oriented in a different direction than the second feed direction; and

wherein the second visually identifiable symbol is different from the first visually identifiable symbol.

9. The set of ink sticks of claim 8, wherein the first and second visually identifiable symbols form a pattern of symbols.

10. The set of ink sticks of claim 8, wherein:
the first visually identifiable symbol is a first alphanumeric character;
and
the second visually identifiable symbol is a second alphanumeric character.

11. The set of ink sticks of claim 10, wherein the first and second alphanumeric characters are a sequence of consecutive alphanumeric characters.

12. The set of ink sticks of claim 10, wherein the first and second alphanumeric characters are a sequence of consecutive numbers.

13. The set of ink sticks of claim 8, wherein the first and second shaped guide elements of the first and second ink sticks are substantially identical in shape and size.

14. The set of ink sticks of claim 8, additionally comprising:
a third ink stick comprising a first three dimensional ink stick body;
wherein the third ink stick body has a third non-planar shaped guide element oriented in a third feed direction;
wherein the third non-planar shaped guide element is shaped to interact with the elongate shaped guide rail of a corresponding third ink stick feed channel for guiding the third ink stick in the third feed direction along the third guide rail;
wherein the third ink stick body has a third insertion perimeter forming the shape of a third visually identifiable symbol; and
wherein the third insertion perimeter is oriented in a different direction than the third feed direction; and
wherein the third visually identifiable symbol is different from both the first and second visually identifiable symbols.

15. The set of ink sticks of claim 14, additionally comprising:
a fourth ink stick comprising a fourth three dimensional ink stick body;
wherein the fourth ink stick body has a fourth non-planar shaped guide element oriented in a fourth feed direction;
wherein the fourth shaped guide element is shaped to interact with the elongate guide rail of a corresponding fourth ink stick feed channel for guiding the ink stick in the fourth feed direction along the fourth guide rail;
wherein the fourth ink stick body has a fourth insertion perimeter forming the shape of a fourth visually identifiable symbol;
wherein the second insertion perimeter is oriented in a different direction than the fourth feed direction; and
wherein the fourth visually identifiable symbol is different from all of the first, second, and third visually identifiable symbols.

16. The set of ink sticks of claim 15, wherein the first, second, third and fourth visually identifiable symbols form a pattern of visually identifiable symbols.

17. The set of ink sticks of claim 15, wherein the first, second, third and fourth visually identifiable symbols are a sequence of four consecutive alphanumeric characters.

18. The set of ink sticks of claim 17, wherein the first, second, third and fourth visually identifiable symbols are a sequence of four consecutive numbers.

19. The set of ink sticks of claim 11, wherein:

- the first horizontal perimeter has at least two first ink stick lateral perimeter segments;
- the first ink stick lateral perimeter segments are on opposite sides of the first ink stick body;
- the first ink stick lateral perimeter segments form the shape of a first alphanumeric character;
- the second horizontal perimeter has at least two second ink stick lateral perimeter segments; and
- the second ink stick lateral perimeter segments are on opposite sides of a second ink stick body; and
- the second ink stick lateral perimeter segments form the shape of the second alphanumeric character.

20. The set of ink sticks of claim 19, additionally comprising:
a third ink stick comprising a third three dimensional ink stick body
having:
a third horizontal perimeter;
wherein the third horizontal perimeter has at least two third ink stick
lateral perimeter segments on opposite sides of the third ink stick body; and
wherein the third ink stick lateral perimeter segments form the shape of
a third alphanumeric character; and
a fourth ink stick comprising a fourth three dimensional ink stick body
having:
a fourth horizontal perimeter;
wherein the fourth horizontal perimeter has at least two fourth ink stick
lateral perimeter segments on opposite sides of the fourth ink stick body;
wherein the fourth ink stick lateral perimeter segments form the shape
of a fourth alphanumeric character; and
wherein the first, second, third, and fourth alphanumeric character are
each different from one another.

21. The set of ink sticks of claim 20, wherein the first, second, third,
and fourth alphanumeric characters form a pattern of alphanumeric characters.

22. The set of ink sticks of claim 20, wherein the first, second, third,
and fourth alphanumeric characters form a sequence of consecutive alphanumeric
characters.

23. A method of inserting an ink stick into an ink feed system, the method comprising:

identifying an ink stick perimeter shape;

matching the ink stick perimeter shape with a correspondingly shaped key plate opening of the ink feed system;

inserting the ink stick in an insertion direction through the key plate opening;

engaging a shaped ink stick guide element on the ink stick with a shaped guide rail in the ink feed system having a shape corresponding to the shape of the shaped ink stick guide element; and

moving the ink stick in a feed direction so that the shaped ink stick guide element engaged with the shaped guide rail guides the shaped ink stick guide element along the shaped guide rail;

wherein the feed direction is different from the insertion direction.

24. The method of claim 23, wherein the insertion direction is substantially perpendicular to the feed direction.

25. The method of claim 23, wherein inserting the ink stick through the key plate opening comprises inserting the portion of the ink stick having the shaped ink stick guide element through the key plate opening before inserting other portions of the ink stick.